

Remarks

Claims 1, 3, 4, and 6-27 are pending in the present application. Claims 6-22 have been withdrawn from consideration. Reconsideration of the instant application in view of the following remarks is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103:

Claims 1, 3-4, and 23 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over US Patent No. 3,213,062 ("the '062 patent"). The '062 patent discloses the compound dimethyldifluoromethanamine which is not claimed in instant claim 1. The Office Action contends that in view of the '062 patent, the instantly claimed compounds are obvious. Applicants respectfully disagree.

First, the compound of the '062 reference is not featured within the scope of the pending claims as amended. As discussed in previously submitted argument, which is hereby incorporated by reference, the Applicants have argued that the compound of the '062 patent does not disclose the compounds recited in claim 1. The Applicants respectfully submit that the '062 patent does not disclose any of the instantly claimed compounds and, further, does not provide any motivation to modify the disclosed compounds to obtain those of instant claim 1. The '062 patent deals specifically with dimethyldifluoromethylamine and does not infer that other "similar" compounds would be useful in the treatment of cellulose filter paper. Moreover, the '062 patent discloses twenty-three examples where only one features a compound similar to that featured in the present claims, i.e., Example XVIII, dimethyldifluoromethylamine, which is not covered by the instant claims. As such, one skilled in the art would have to be motivated not only to use the compound featured in Example XVIII of the '062 patent but, also, be motivated to modify the compound to one that reads on the instant claims. There is simply no motivation to do such in the '062 patent. Applicants have shown previously, and herein, *infra*, that the compounds according to the present invention have properties not foreseen when compared to those of the cited art. Therefore, one of skill in the art would neither be motivated to modify compounds according to the '062

patent to arrive at those of instant claim 1 nor use these similar compounds to treat cellulose filter paper. Withdrawal of the rejection is respectfully requested.

Further, claims 3 and 4 each directed or indirectly depend from claim 1 and are patentable over the cited reference for at least the same reasons as set forth with regard to claim 1. Withdrawal of the rejection of these claims is respectfully requested.

Claim 23 is directed to fluorinating agents comprising the compounds of formula (I). The '062 patent does not teach or suggest fluorinating agents comprising the compounds of formula (I) as recited in claim 23 and there is no indication in the '062 patent that the compounds of instant claim 23 could be useful as fluorinating agents. The '062 reference discloses that dimethyldifluoromethylamine, which is specifically excluded in claim 23, may be used as a treating agent for cellulosic products but shows no enabled process for using the compound as a fluorinating agent. In fact, the '062 reference states that the fluorinated compounds obtained in the process of the '062 reference may serve as intermediates in the preparation of fluorine-containing compounds which are "difficult to obtain." *See the '062 patent, column 13, lines 53-63.* Since the '062 patent clearly states that fluorine-containing compounds are "difficult to obtain," there is nothing to motivate one of skill in the art to modify the disclosed compounds to arrive at suitable fluorinating agents. Further, even if one of skill in the art were to attempt such, it would require undue experimentation to arrive at suitable fluorinating agents, as claimed in instant claim 23. Moreover, there is no disclosure of any processes in the '062 patent showing how to fluorinate compounds. The '062 patent cites many uses for the obtained compounds, as referenced in column 13, lines 55-56 where the '062 patent states that they can be used in a large number of fields. One such field listed in the '062 patent is to serve as intermediates in the preparation of fluorine-containing compounds. However, dimethyldifluoromethylamine is specifically recited as being valuable as a treating agent for cellulosic products. *See column 14, lines 58-60.* Given that the '062 patent discloses multiple uses for the compounds, that fluorine-containing compounds are difficult to obtain, and that dimethyldifluoromethylamine is useful in treating cellulosic products one skilled in the art would not be motivated to use a compound similar to that of dimethyldifluoromethylamine as a fluorinating agent absent the instant disclosure.

The Applicants are further submitting hereto as Appendix A another affidavit by one of the inventors which showing a comparison of a compound according to the present invention, 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine, which is "similar" to the compound of the '062 patent, dimethyldifluoromethylamine. The affidavit states that, based on the comparison, employing 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine a diastereomeric excess is achieved which is approximately two times higher than by employing dimethyldifluoromethylamine as fluorination agents. The inventor states that based on the reaction mechanisms taking place, one of skill in the art would not expect to achieve high diastereomeric excess, i.e., up to 99%, when using 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine over dimethyldifluoromethylamine. Thus, 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine showed unexpected improvements in diastereomeric excess as a fluorination agent over the compound cited in the '062 patent.

It has been shown above that the '062 patent does not disclose compounds according to the present invention and that the closest compound disclosed in the '062 patent is never shown to be used as a fluorination agent, rather only a compound for treating cellulosic products. Further, since, as stated in the '062 patent, fluorine-containing compounds are difficult to obtain, one would not modify dimethyldifluoromethylamine to a compound covered by the instant claims AND use such a compound as a fluorination agent. Moreover, the Applicants have shown that compounds according to the present invention provide an unexpected diastereomeric excess over dimethyldifluoromethylamine when used as a fluorination agent.

As such, one of skill in the art would not find the fluorinating agents of claim 23 obvious in view of the '062 patent. Withdrawal of the rejection is respectfully requested.

Claim 24 and recites compounds according to formula (I) wherein R¹ is hydrogen, C₄-C₁₂-alkyl and claim 25 recites use of the compounds of formula (I) wherein R¹ is hydrogen, C₄-C₁₂-alkyl as fluorinating agents. The '062 patent does not recited compounds of formula (I) wherein R¹ is hydrogen, C₄-C₁₂-alkyl. The '062 patent deals specifically with dimethyldifluoromethylamine and does not infer that other "similar" compounds would be useful in the treatment of cellulose filter paper. Therefore, one of

skill in the art would not be motivated to use other similar compounds to treat cellulose filter paper to render instant claim 24 obvious. Moreover, the arguments provided above further apply to claim 24. Withdrawal of the rejection is respectfully requested.

Claim 26 is directed to 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine which is not disclosed in the '062 reference. The arguments provided above further apply to claim 26 and show the claimed compound is not obvious in view of the '062 patent. As shown above, the Applicants have demonstrated that 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine provides unexpected and superior results when compared to dimethyldifluoromethylamine of the '062 patent. Therefore, the compound of instant claim 26 is not obvious and allowance of claim 26 is respectfully requested.

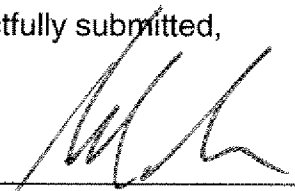
Claim 27 is directed to fluorinating agents comprising the compound of claim 26. As shown above, the '062 patent does not disclose the use of the claimed compound as a fluorination agent and that unexpected properties were obtained when employing the claimed compound as a fluorination agent over the dimethyldifluoromethylamine cited in the '062 patent. As such, claim 27 is not obvious in view of the '062 patent. Allowance of claim 27 is respectfully requested.

In view of the foregoing, claims 1, 3-4 and 23-27 are now in condition for allowance. A response to the Amendment in the form of a Notice of Allowability is hereby solicited.

The USPTO is hereby authorized to charge any fees, including any fees for an extension of time or those under 37 C.F.R. 1.16 or 1.17, which may be required by this paper, and/or to credit any overpayments to Deposit Account No. 50-2527.

Respectfully submitted,

By


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/lmr

APPENDIX “A”

PATENT APPLICATION
CH7988
LeA 36,377

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN APPLICATION OF)	
)	GROUP NO.: 1626
WOLFGANG EBENBECK ET AL)	
)	CONFIRMATION NO.: 2430
SERIAL NO.: 10/751,623)	
)	EXAMINER: REBECCA L. ANDERSON
FILED: JANUARY 5, 2004)	
)	
TITLE: FLUORINATING REAGENTS)	
AND THEIR PREPARATION)	

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Declaration under 37 C.F.R. § 1.132

I, Dr. Wolfgang Ebenbeck, a resident of Leverkusen, Germany do hereby declare as follows:

I am a chemist having studied at the University of Regensburg in Germany and I received the degree of Ph.D. at the University of Regensburg in the year of 1999. Since 2004 I have been an employee of LANXESS Deutschland GmbH (formerly Bayer Chemicals AG, formerly Bayer AG, Leverkusen, Germany), and presently work in the department of Fluorine Chemistry as a Head of Fluorine Chemistry thereof;

I am a research chemist having 8 years experience in the field of fluorine chemistry, including the testing and evaluation of compounds;

I am an named inventor of the above captioned pending US patent application, Serial No. 10/751,623 (hereinafter referred to as "the '623 Application");

In the present application, claims 1, 3-4, and 23 have been rejected as being unpatentable over U.S. Patent No. 3,213,062 (hereinafter "the '062 patent).

We submitted to the USPTO two examples A and B with the declaration filed on March 28, 2008. In view of these examples, I declare follows:

In the Examples A and B, 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine, reagent according to the present invention and 1,1-difluoromethyl-N,N-dimethylamine, reagent according to the '062 reference, were both employed as fluorination reagents in the fluorination of (2S-trans)-N-(tert-Butoxycarbonyl)-4-hydroxyproline benzyl ester. Comparison of the Examples lead to the conclusion that by employing 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine a diastereomeric excess can be achieved which is approximately two times higher than by employing 1,1-difluoromethyl-N,N-dimethylamine.

A person skilled in the art should have presumed that 1,1-difluoromethyl-N,N-dimethylamine comprises similar chemical properties compared to 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine. Although 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine is sterical more hindered than 1,1-difluoromethyl-N,N-dimethylamine any reaction effect is unforeseeable because any reaction effects depend on the mechanism. Moreover, it is often unclear whether the mechanism rather proceeds by building a carbenium ion, similar to a Sn1 mechanism or rather proceeds to a lower electronical stabilized transition state, similar to a Sn2 mechanism. If the fluorinating mechanism proceeds more similar to a Sn1 mechanism a person skilled in the art had never expected any differences in the achieved diastereomeric excess by employing the two compounds as fluorinating agents. If the fluorinating mechanism proceeds more similar to a Sn2 mechanism a person skilled in the art should have expected to achieve more diastereomeric excess by employing 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine due to a sterical effect of the bulky t-butyl group. Due to the fact that often reactions proceed as a mixture of both Sn1 and Sn2 mechanism and due to the fact that although a sterical effect of the t-butyl group in the 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine could be effective, a person skilled in the art had never expected to achieve such high diastereomeric excess up to 99 %. According to that, it was surprising that by using 1,1-difluoro-N,N-2,2-tetramethyl-1-propanamine as the reagent a much higher diastereomeric excess was achieved in comparison to the use of 1,1-difluoromethyl-N,N-dimethylamine. Therefore, the compounds according to the present invention show remarkable and unexpectedly improvements in diastereomeric excess when employed as a fluorination reagent over the compound found in the '062 reference.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed at Leverkusen, Germany, this 19th day of October, 2009

Signature: 
Dr. Wolfgang Ebenbeck